LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A system for optimizing a circuit design comprising:

a plurality of value sets represented as a plurality of real chromosomes, the plurality of value sets correspond to different circuit configurations associated with the circuit design generated by a circuit analysis tool;

a real cost function that determines real costs for the plurality of real chromosomes;

a genetic algorithm that generates at least one generation of speculative chromosomes, the speculative chromosomes representing value set variations of the plurality of value sets, each generation of speculative chromosomes being assigned a speculative count corresponding to a speculative chromosome generation; and

a validator that initiates a validation once at least one speculative chromosome has a predetermined speculative count, the validation comprising executing the real cost function on the at least one speculative chromosome to provide a real cost associated with the at least one speculative chromosome.

2. (Currently Amended) The system of claim 1, ~~further comprising a real cost function that determines real costs for the plurality of real chromosomes, and an incremental cost function that determines speculative costs for speculative chromosomes.~~ wherein the real cost function comprises the circuit analysis tool and a power/timing estimator.

3. (Currently Amended) The system of ~~claim 2, the validation comprising executing the real cost function on the at least one speculative chromosome to provide a real cost associated with the at least one speculative chromosome.~~ claim 1, wherein the genetic algorithm generates generations of speculative chromosomes until a desirable circuit configuration based on real costs has been satisfied.

4. (Original) The system of claim 1, the genetic algorithm generates a speculative child chromosome from at least one of a first parent chromosome and a second parent chromosome, wherein the speculative child chromosome is assigned a speculative count that is higher than the speculative count of the parent chromosome having the higher speculative count.

5. (Original) The system of claim 4, the at least one of a first parent chromosome and a second parent chromosome is selected from at least one of the plurality of real chromosomes and subsequent generations of speculative chromosomes.

6. (Original) The system of claim 1, further comprising a speculation counter that increments for each new generation of speculative chromosomes generated by the genetic algorithm.

7. (Original) The system of claim 6, the validator initiates a validation on at least one speculative chromosome when the speculation counter has achieved a count value equal to the predetermined speculative count.

8. (Original) The system of claim 1, further comprising a speculative pool that stores speculative chromosomes and assigned speculative counts.

9. (Original) The system of claim 8, the validator initiates a validation once at least one speculative chromosome in the speculative pool has a predetermined speculative count.

10. (Original) The system of claim 9, the validator initiates a validation on the entire speculative pool once at least one speculative chromosome in the speculative pool has a predetermined speculative count.

11. (Currently Amended) The system of claim 1, ~~the plurality of value sets being a plurality of circuit configurations generated by an optimization tool.~~ further comprising an

incremental cost function that determines speculative costs for speculative chromosomes, the speculative costs corresponding to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome.

12. (Currently Amended) A method for selecting a value set associated with a set of parameters of a circuit design, the method comprising:

determining real costs for a plurality of real chromosomes that represent a plurality of value sets, the plurality of value sets correspond to different circuit configurations associated with the circuit design generated by a circuit analysis tool;

generating at least one generation of speculative chromosomes that represent value set variations of the plurality of value sets;

assigning a speculative count to speculative chromosomes based on a corresponding generation of the speculative chromosome;

approximating speculative costs for the speculative chromosomes; ~~and~~

repeating the generating of speculative chromosome generations, assigning speculative chromosomes and approximating speculative costs, until at least one speculative chromosome has a predetermined speculative count; and

determining real costs for the at least one speculative chromosome, upon the at least one speculative chromosome having a predetermined speculative count.

13. (Original) The method of claim 12, the determining real costs further comprising executing a real cost function on the plurality of real chromosomes and the approximating speculative costs comprising executing an incremental cost function on the speculative chromosomes.

14. (Currently Amended) The method of claim ~~13~~ 12 further comprising executing the method of claim 13 until a desirable circuit configuration based on real costs has been satisfied. ~~the execution of the real cost function comprising optimizing a circuit design, and~~

~~the plurality of value sets being a plurality of circuit configurations generated by the optimization.~~

15. (Original) The method of claim 14, the speculative chromosomes representing speculative file databases that are circuit configuration variations of real file data bases, each real file data base defines a circuit configuration.

16. (Original) The method of claim 12, the generating at least one generation of speculative chromosomes comprising executing a genetic algorithm that employs parent chromosomes selected from at least one of real chromosomes and speculative chromosomes.

17. (Original) The method of claim 16, wherein a speculative child chromosome is generated from at least one of a first parent chromosome and a second parent chromosome, wherein the speculative child chromosome is assigned a speculative count that higher than the speculative count of a parent chromosome having a higher speculative count.

18. (Original) The method of claim 12, further comprising incrementing a speculation counter for each new generation of speculative chromosomes, a validation being initiated when the speculative counter has a predetermined speculative count.

19. (Currently Amended) The method of claim 12, ~~further comprising executing a validation of the at least one speculative chromosome when at least one speculative chromosome has a predetermined speculative count, the validation comprising executing a real cost function on the at least one speculative chromosome to provide a real cost associated with the at least one speculative chromosome.~~ wherein the speculative costs correspond to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome.

20. (Original) The method of claim 12, further comprising storing speculative chromosomes and associated speculative counts in a speculative pool, a validation being initiated when a speculative chromosome in the speculative pool has a predetermined speculative count.

21. (Original) The method of claim 20, further comprising validating the entire speculative pool when at least one speculative chromosome has a predetermined speculative count.

22. (Currently Amended) A computer readable medium having computer executable instructions for performing a method comprising:

determining real costs for a plurality of real chromosomes that represent a plurality of value sets, the plurality of value sets correspond to different circuit configurations associated with a circuit design generated by a circuit analysis tool;

generating at least one generation of speculative chromosomes that represent value set variations of ~~a~~ the plurality of value sets;

approximating speculative costs associated with speculative chromosomes in each speculative chromosome generation;

assigning a speculative count to speculative chromosomes based on a corresponding generation of the speculative chromosome; ~~and~~

repeating the generating of speculative chromosome generations and assigning speculative counts, until at least one speculative chromosome has a predetermined speculative count; and

determining real costs associated with at least one speculative chromosome that has a predetermined speculative count.

23. (Currently Amended) The method of claim 22, ~~further comprising approximating costs associated with speculative chromosomes in each speculative chromosome generation~~ wherein the real costs are determined by a power/timing estimator.

24. (Currently Amended) The method of claim 22, further comprising executing the method of claim 22 until a desirable circuit configuration based on the real costs has been

satisfied ~~determining real costs associated with at least one speculative chromosome once at least one speculative chromosome has a predetermined speculative count~~.

25. (Original) The method of claim 22, further comprising storing a plurality of speculative chromosomes in a speculative pool, and determining real costs associated with the entire pool once at least one speculative chromosome in the speculative pool has a predetermined speculative count.

26. (Currently Amended) A system for minimizing a cost associated with a ~~set of parameters representing a solution~~ circuit design, the system comprising:

means for determining real costs associated with a plurality of real chromosomes, wherein the real chromosomes represent different circuit configurations associated with the circuit design;

means for generating generations of speculative chromosomes with assigned speculative counts corresponding to a generation number of the speculative chromosome, the speculative chromosome being assigned a speculative count that is higher than a parent chromosome from which it is derived; ~~and~~

means for postponing validation of at least one speculative chromosome, until at least one speculative chromosome has a predetermined speculative count; and

means for validating of at least one speculative chromosome by executing the means for determining a real cost on at least one speculative chromosome.

27. (Currently Amended) The system of claim 26, further comprising means for determining a speculative cost for a respective speculative chromosome, the speculative cost corresponding to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome.

28. (Currently Amended) The system of claim 26, ~~further comprising means for validating, the means for validating executing a validation by executing the means for~~

~~determining a real cost on at least one speculative chromosome~~ wherein the real costs are determined by a real cost function that comprises an analysis tool and a power/timing estimator.

29. (Original) The system of claim 28, the means for validating executing the means for determining a real cost on a plurality of speculative chromosomes retained in a speculative pool.